

REMARKS

Applicant respectfully requests correction of the Examiner's disposition listing of the pending claims as 1-16 and 26-61; it should include claims 62 and 63, indicated as allowed.

Claims 1-28 and 53-58 were canceled without prejudice. Objected to claims 40 and 43 are herein canceled without prejudice. Claims 42 and 45 are canceled without prejudice.

CLAIM OBJECTIONS

Objected to claim 44 is amended to include the limitations of claim 29, from which it depends, thus overcoming the objection.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 29-39, 41, 45-52, and 59-61 are rejected under 35 U.S.C. §102(b) as anticipated by Chen. Applicant respectfully disagrees, and provides arguments addressing each basis of rejection.

Applicant disagrees that "No specific limit is placed upon how free of DNA contamination is "substantially free". In fact, Applicant has disclosed

The present invention discloses reagents and methods capable of isolating from a biological sample RNA that is substantially free of DNA and thus ready for reverse transcriptase polymerase chain reaction (RT-PCR). Such RNA is termed substantially pure RNA, and is required for proper diagnosis of gene expression in clinical, research and other applications (p. 5 lines 16-18).

Thus, RNA that is "substantially free" of DNA is RNA that does not reveal the presence of DNA by RT-PCR.

With respect to claims 29-39 and 41, Applicant has amended independent claim 29 part (b) to recite the presence of a buffer sufficient to maintain a pH in the range from about pH 3.6 to below pH 4.0. The amendment is supported at least at p. 8 lines 16-17 ("The concentration of buffer should be sufficient to maintain the composition at a pH between about 3.6 to below 4.0."), and by originally filed claim 45 (now canceled), thus introducing no new matter.

Chen does not disclose such a buffer and thus does not anticipate. In contrast to Applicant's claim, Chen discloses "0.005% - 0.02% pH regulator" (i.e., buffer), which corresponds to a concentration of about 2 mM sodium ions in Chen's composition. At this concentration, there is almost no buffering capacity, and certainly not a buffer capacity sufficient to maintain a pH in the range from about pH 3.6 to below 4.0, as Applicant claims.

For at least this reason, independent claim 29 and dependent claims 30-39 and 41 are not anticipated by Chen.

Claim 45 is canceled, rendering the rejection moot with respect to this claim.

Claim 46 depends either from claims 29 or 44; both claims are now amended and thus distinguished, as previously analyzed.

With respect to claims 47-52, independent claims 47 and 48 are distinguished below, and claims 49-52 depend from at least one of claims 29, 44, 47, or 48, each of which is amended and/or

distinguished above or below.

With respect to claims 47-52, Applicant has amended independent claim 47 to clarify that the sedimentation or filtration to obtain a purified sample substantially free of DNA, proteins, and cellular components occurs without adding a hydrophobic organic solvent to induce phase separation. The amendment is supported at least at p. 11 lines 17-19 (emphasis added) "Acidic phenol precipitation of DNA Leaving RNA in Supernatent. One embodiment of the invention isolates substantially pure RNA using an acidic phenol solution without performing phase separation." In contrast, Chen describes a phase separation method: Chen's sample is homogenized in a phenol and guanidinium monophase reagent, during which RNA is extracted along with DNA and proteins. That is why, in the next step, Chen adds chloroform to induce phase separation to segregate these molecules and to obtain RNA; i.e., the reagent is no longer monophase. This is a critical step for Chen to isolate RNA: DNA and proteins sequester in the organic phase, RNA sequesters in the aqueous phase which is collected and treated with ethanol to precipitate RNA.

In contrast, claim 47 and dependent claims do not require phase separation, because DNA and proteins are insoluble in the monophase reagent, while RNA is selectively solubilized and extracted.

With respect to claim 48, Applicant has amended it to clarify that, like claim 47, the step of obtaining a purified sample substantially free of DNA, proteins, and cellular components (step b) occurs without adding a hydrophobic organic solvent to induce phase separation. However, claim 48 is a two step method; while phase separation is not required to separate DNA and protein for the same reasons as explained above with respect to claim 47, phase separation may occur in a subsequent step (step c).

For the reasons explained above, Chen does not obtain a purified sample substantially free of DNA, proteins, and cellular components without adding a hydrophobic organic solvent to induce phase separation, and thus does not anticipate claims 47, 48, and dependent claims.

With respect to claim 59 and dependent claims 60 and 61, the Examiner states

Chen teaches a method for isolating purified RNA from a biological sample of claims 29 and 59...

...

With regard to claim 59, Guanidine and Chloroform are "water soluble organic solvents" which are present in the Chen reference. There is no requirement in the claims that the separation occur without phase separation. Therefore, the argument is not commensurate in scope with the claim

Applicant respectfully disagrees with the basis of the rejection. Claim 59 recites "at least one water-soluble organic solvent...". Guanidine is not a solvent, as known to one skilled in the art. Chloroform is not water soluble, as known to one skilled in the art.

Applicant respectfully asserts that the claimed treatment is "to selectively precipitate higher molecular weight RNA from the sample"; Applicant's claims require "precipitating purified higher

molecular weight RNA [defined in the specification as RNA > 200 bases] from the sample".

Chen does not disclose selective precipitation of higher molecular weight RNA. In fact, Chen's method precipitates total RNA. See title: Total RNA Extraction Reagent and Preparation Method Thereof, and Method for Extraction of Total RNA"; see also Chen claim 6 step 5, pp. 3-4, "A type of RNA extraction method using the total RNA extraction reagent described in claim 1 comprising the following extraction steps ...(emphasis added).

Thus, Applicant believes that these rejections are overcome and respectfully request their withdrawal.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claim 42 is rejected under 35 U.S.C. §103(a) as obvious over Chen in view of Chomczynski '994. Claim 42 is canceled without prejudice, rendering the rejection moot.

CONCLUSION

Applicant believes the application is in complete condition for allowance, and believes there are no fees due with this filing other than the fee of \$395.00 for the Request for Continued Examination, which Applicant has authorized payment (see Electronic fee sheet). If other fees are required, the Examiner is authorized to charge them to Deposit Account No. 23-3000.

The Examiner is invited to telephone Applicant's undersigned representative with questions.

Respectfully submitted,
WOOD, HERRON & EVANS, L.L.P.

/Beverly A. Lyman/

Beverly A. Lyman
Reg. No. 41,961

2700 Carew Tower
441 Vine Street
Cincinnati OH 45202
513 2412324
513 421 7269 facsimile